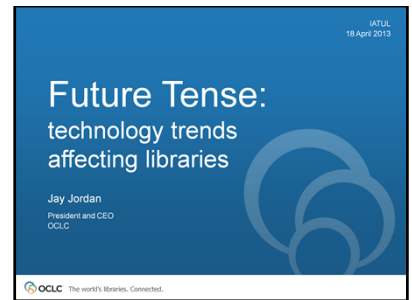


Future Tense: Technology Trends Affecting Libraries

Jay Jordan
OCLC, Ohio, USA

Jay Jordan, "Future Tense: Technology Trends Affecting Libraries." *Proceedings of the IATUL Conferences*. Paper 26.
<http://docs.lib.purdue.edu/iatul/2013/papers/26>

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Technology Trends and Libraries
IATUL Conference
Melbourne, South Africa
18 April 2013

Greetings.

In my remarks today, I am going to discuss five trends in technology that are either affecting libraries or are going to affect libraries, sooner rather than later.

CLICK TO MAP OF COOPERATIVE



Before I get to the trends, let me say a few words about OCLC and Australian libraries.

2013 marks the 46th year of the OCLC cooperative and the 42nd anniversary of the WorldCat database.

Today, OCLC serves more than 72,000 libraries in 170 countries.

It is always worth repeating that our public purposes of furthering access to the world's information and reducing the rate of rise of per-unit library costs dominate our plans and activities.

CLICK TO NATIONAL LIBRARY OF AUSTRALIA



How do we optimize global cooperation in a Web world?

This is an artist's conception of what the information landscape looks like for many people.

How are people connecting with the information that they want?

Where is the library in this picture?

This brings me to my first trend, which is mobile apps.

CLICK TO CELL PHONE 1998



Let me preface the evolution of search with an observation about how fast technology is changing.

That's the actor Michael Douglas in the movie "Wall Street" in 1987. You can see his Dyna Tac cellphone in operation.

It's slightly smaller than a walkie-talkie, for those of you who can remember what that was.

On the right are Nokia phones.

Remember them?

These little guys were state-of-the-art in cell phone technology back in 1998.

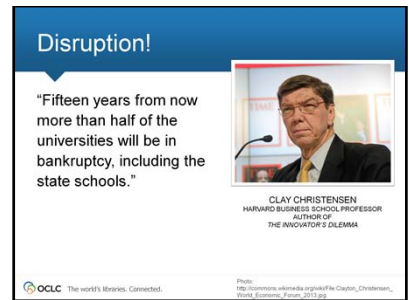
That is when I joined OCLC.

Now, 15 years later, Nokia has moved from number 1 to a position just above BlackBerry.

CLICK TO SEARCH ENGINE MARKET SHARE



Incumbent players in a particular industry routinely fail to make the necessary changes to the way they do things, even when they can see the disruption occurring all around them. In almost every case, they see the disruptors as not worthy of their attention because they are operating at the low end of the market, and either don't see that as important or are too committed to their existing business models.”—Clay Christensen, Harvard Business School Professor, Author of *The Innovator's Dilemma*



Here's another thought-provoking statement from Professor Christensen.

“Fifteen years from now more than half of the universities will be in bankruptcy, including the state schools. “



Here's another thought-provoking statement from Professor Christensen.

“Fifteen years from now more than half of the universities will be in bankruptcy, including the state schools. “

Clayton Christensen, the famed Harvard [Business](#) School Professor known for coining the term “disruptive innovation,” believes that one of his most enduring legacies will be an idea he first put forward in his 2003 book [The Innovator's Solution](#): don't sell products and services to customers, but rather try to help people [address their jobs-to-be-done](#).

interesting ...and Mike and I were just talking about “jobs to be done” for traditional users of libraries and other consumers of library services....in the second case the CRIS....identity and research output management for individual researchers on behalf of both individual and the institution....new value propositions for libraries within the “walled garden” of the institution but also making the researcher and his work visible appropriately on the Web

- Evolution of search
- E-volution of teaching and publishing
- Cloud computing
- Partnerships
- Group/social/gaming
- Linked Open Data

I asked some of our research scientists what they thought were trends worth watching in 2013.

Here's what they suggested.

- Evolution of search
- E-volution of teaching and publishing
- Cloud computing
- Partnerships
- Group/social/gaming
- Linked Open Data

CLICK TO TREND: EVOLUTION OF SEARCH


Let's start with the evolution of search.

CLICK TO MICHAEL DOUGLAS WITH CELL PHONE

Evolution of search

Search Engine Market Share

	Global	U.S.
Google	88.8%	86.3%
Bing	4.2%	7.3%
Baidu	3.5%	
Yahoo	2.4 %	3.1%
Facebook		1.4%

 OCLC The world's libraries. Connected.
 Source: karmamark

Here are some recent statistics for search engines.

Not surprisingly, Google continues to be the leader of the pack, both in the U.S. and globally.

Google is clearly today's leader in search.

CLICK TO GOOGLE KNOWLEDGE GRAPH

CLICK TO WOLFRAM ALPHA



With the Knowledge Graph, Google is moving beyond searching.

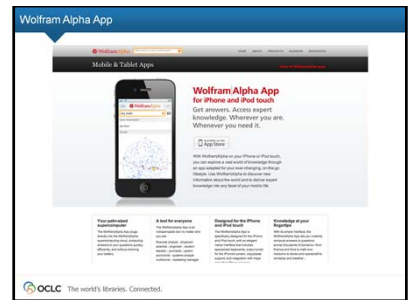
The journey of a query starts before you ever type a search, with crawling and indexing the web of trillions of documents.

Finding information by crawling

Organizing information by indexing

EDUCATORS: With the materials on this site, you can help your students become skilled searchers- whether they're just starting out with search, or ready for more advanced training.

CLICK TO WOLFRAM ALPHA



Is Wolfram|Alpha a search engine?

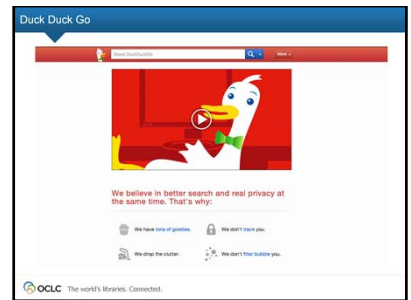
It answers factual queries directly by computing the answer from structured data, rather than providing a list of documents or web pages that might contain the answer as a search engine might.

Wolfram|Alpha introduces a fundamentally new way to get knowledge and answers—
not by searching the web, but by doing dynamic computations based on a vast collection of built-in data, algorithms, and methods.

On the screen are part of the results of a search for “cities near Melbourne.”

With its simple interface, the Wolfram|Alpha App lets you instantly compute answers to questions across thousands of domains—from finance and food to math and medicine to stocks and spacecraft to wordplay and weather...

CLICK TO DUCK DUCK GO



DuckDuckGo uses information from crowdsourced websites such as Wikipedia to augment traditional results and improve relevance.

The search engine policy emphasizes privacy and does not record user information.

DuckDuckGo's results are a compilation of many sources, including Yahoo! Search BOSS, Wikipedia, Wolfram Alpha Bing, and its own Web crawler, the DuckDuckBot.

It uses data from crowd-sourced sites, including Wikipedia, to populate "Zero-click Info" boxes—grey boxes above the results that display topic summaries and related topics.

DuckDuckGo positions itself as a search engine that puts privacy first and as such it does not store IP addresses, does not log user information and uses cookies only when needed.

CLICK TO FACEBOOK



As you know, Facebook recently got into the search business.

Graph Search is a search engine that mines your Facebook connections to give you personalized answers to queries about people, photos, places and interests.

Unlike Google, it doesn't search the Web—it searches Facebook.

So, you could search for movies liked by people who liked Mitt Romney.

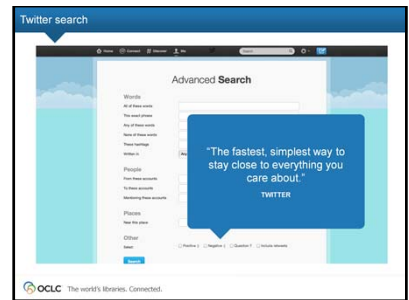
Or, bars in Dublin, Ireland, liked by people who live in Dublin, Ireland.

In short, Facebook's search will attempt to replicate the experience of being able to ask a question of all of your friends at once, as if they were all gathered in one room.

And it actually goes beyond that, because it includes information from people you've never met, provided they've made it public (or available to friends of friends, or people who live in your city, etc.).

And, of course, Facebook can recall and organize the information automatically and instantaneously in ways that your friends couldn't.

CLICK TO TWITTER



Twitter is also in the search business.

Twitter emphasized its news and information-network strategy in November 2009 by changing the question asked to users for status updates from "What are you doing?" to "What's happening?"

Throughout the history of Twitter, people have used trends and search to learn of breaking news, to get details on disasters, and to share reactions to sports and television shows.

Lawyers have monitored Twitter Search results of televised trials to gauge response to witnesses, arguments or even themselves, and to make adjustments.

You will have to experiment to determine whether this type of information might be useful to you.

After an earthquake, someone on Twitter said that, in an emergency, Twitter is simultaneously the best source of accurate news, inaccurate news and inappropriate humor. –

Source:

[http://www.abajournal.com/magazine/article/twitter talk its search and trends can keep you up to speed/](http://www.abajournal.com/magazine/article/twitter_talk_its_search_and_trends_can_keep_you_up_to_speed/)

CLICK TO LIBRARY OF CONGRESS AND TWITTER



As you may have heard, back in April 2010, the Library of Congress agreed to archive four years' worth of public Tweets.

LC needed to build a sustainable system for receiving and preserving an enormous number of Tweets, then organize that dataset by date.

At the time, Twitter also agreed to provide future public Tweets to the Library under the same terms, meaning any system would need the ability to scale up to epic size.

The resulting archive is around 300 TB in size.

But there's still a huge challenge: the Library needs to make that huge dataset accessible to researchers in a way they can actually use.

Right now, even a single query of the 2006-2010 archive takes as many as 24 hours to execute, which limits researchers' ability to do work in a timely way.

So, the next year is going to be interesting.

CLICK TO SIGN: IN CASE OF FIRE EXIT BUILDING BEFORE TWEETING ABOUT IT



This sign sort of sums up the status of search.

With my next trends, we are going from Twitter to MOOCs.

CLICK TO TREND: MOOCS

Our second trend is the e-volution in teaching and publishing. By e-volution, I mean the slow but steady migration of certain aspects of teaching and publishing to an electronic environment. It has been talked about for years, and now it is staring to happen.

CLICK TO MOOCs



As you know, MOOCs are causing a great deal of commotion for universities and their libraries.

A **massive open online course (MOOC)** is a type of online course aimed at large-scale participation and open access via the web.

Though the design of and participation in a MOOC may be similar to college or university courses, MOOCs typically do not offer credits awarded to paying students at schools.

In the last year, MOOCs have exploded, from a handful of early innovators, to dozens of elite institutions becoming partners with organizations like Coursera, edX, and in the UK, the Open University lead FutureLearn venture.

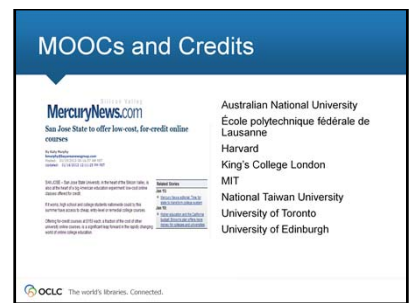
Some of the attention behind these new MOOCs centers on making e-learning more scalable, sustainable, or profitable.

In general, the rise of MOOCs has the potential to shift the conversation in regards to open access.

The New York Times labeled 2012 “The Year of the MOOC.”

Mr. Thrun said his biggest question about the proposed platform was whether the courses could be delivered online at very low cost while maintaining the rigor of a traditional class. "My main concern is quality—it has to work, it has to be really high quality," he said. The quality of a Udacity [pilot project](#) featuring three classes at San Jose State University is currently being put to the test. Its effectiveness is being studied, in research supported by the National Science Foundation. (Chronicle of Higher Education, March 14, 2013)

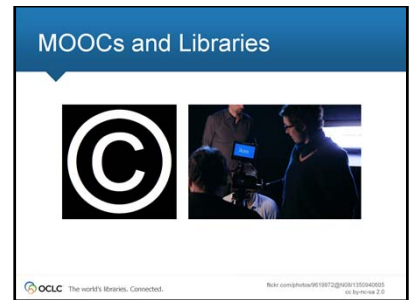
CLICK TO MOOCs AND CREDITS



Recently, San Jose State University in California signed a deal with Udacity, one of the lead venture capital player in this space, to offer three classes in remedial and college level algebra, classes that are needed by many in the student population and classes that can prolong the increasingly expensive residential student experience.

Each course will cost \$150, far less than more traditional course offerings.

CLICK TO MOOCs and LIBRARIES



Skepticism

Wait and See

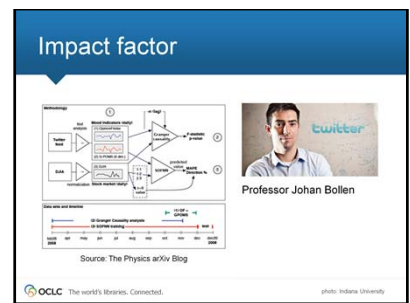
Concern about viability

Not surprisingly due to the “open” nature of course offerings, most libraries are engaged around clearing copyrighted materials for use in classes.

This is important not only because universities have partnerships with commercial entities but also because the courses are being offered to a geographically distributed audience, thus removing fair use as a fallback position.

Let me turn now to the next trend.

CLICK TO CLOUD SERVICES



Johan Bollen's 'Twitter Predictor' is a formula for gauging society's mood based on Twitter or Facebook posts. / Indiana University photo

Millions of your 140-character tweets - that mindless drivel and those snippets of wisdom - have already predicted the bobbing of the stock market.

Soon, they could divine the onset of the flu or the movement of politics.

Since his 2010 research article set people atwitter, Indiana University researcher Johan Bollen has broadened his formula for gauging society's mood based on Twitter or Facebook posts. This week, he won a patent for what many have dubbed "the Twitter predictor."

The original paper, entitled ["Twitter mood predicts the stock market,"](#) investigated whether "collective mood states derived from large-scale Twitter feeds" like OpinionFinder and Google-Profile of Mood States correlated with the value of the Dow Jones Industrial Average. What they found was that their algorithm not only paralleled market changes, it predicted them, with startling 87.6 percent accuracy.

Derwent Capital Markets, a London-based hedge fund set to open for public investment on April 1, has pooled together \$40 million to obtain exclusive rights to the Twitter predictor, according to the [Indiana Daily Student](#). Bringing on Bollen and Mao as personal consultants, they plan to create a trading model based on the findings.

WIKIPEDIA:

Open access (OA) is the practice of providing unrestricted access via the [Internet](#) to [peer-reviewed scholarly journal](#) articles. OA is also increasingly being provided to theses, scholarly monographs and book chapters.^[2]

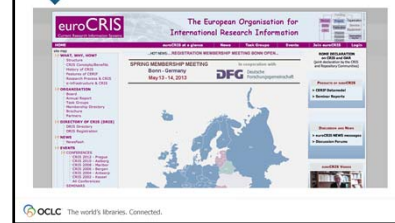
Open access comes in [two degrees](#): **Gratis OA** is no-cost online access, while **Libre OA** is Gratis OA plus some additional usage rights.^[3]

Many [librarians](#) have been vocal and active advocates of open access. These librarians believe that open access promises to remove both the *price barriers* and the *permission barriers* that undermine library efforts to provide access to the journal literature,^[71] see also the [Serials crisis](#). Many library associations have either signed major open access declarations, or created their own. For example, the [Canadian Library Association](#) endorsed a Resolution on Open Access in June 2005.^[72] Librarians also educate faculty, administrators, and others about the benefits of open access. For example, the [Association of College and Research Libraries](#) of the [American Library Association](#) has developed a Scholarly Communications Toolkit.^[73] The [Association of Research Libraries](#) has documented the need for increased access to scholarly information, and was a leading founder of the [Scholarly Publishing and Academic Resources Coalition](#) (SPARC).^[74]

There is a question, however, as to the extent to which Open Access will solve the serials crisis. In a [Nature](#) Web Focus forum, Kate Worlock discusses whether Open Access is truly the answer to the crisis, or if it is simply an ends to a means in a world with shrinking library budgets. The argument from the publisher is that while the cost of publications have "undisputedly [sic] risen more sharply than the library budgets," the library budget is too small of a portion of the university's (in this example) overall budget at roughly 2%.^[75]

At most universities, the library houses the institutional repository, which provides free access to scholarly work of the university's faculty. Some open access advocates believe that institutional repositories will play a very important role in responding to open access mandates from funders.^[76] The Canadian Association of Research Libraries has a program^[77] to develop institutional repositories at all Canadian university libraries.

An increasing number of libraries provide hosting services for open access journals. A recent survey by the Association of Research Libraries ^[78] found that 65% of surveyed libraries either are involved in journal publishing, or are planning to become involved in the very near future.



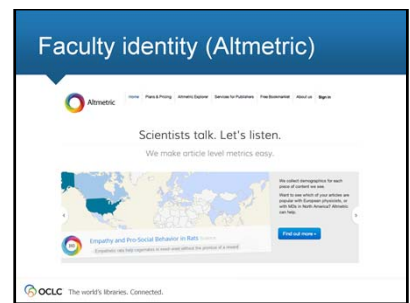
It is the role of euroCRIS to:

- **Promote and improve communication and interaction between global CRIS;**
- **Maintain and publish the CERIF (Common European Research Information Format) recommendation and any standards endorsed by euroCRIS;**
- **Organize and run the CRIS series of conferences with associated workshops and other events**



The HKU Scholars Hub is the institutional repository of The University of Hong Kong.

As a key vehicle of HKU's [Knowledge Exchange Initiative](#), The Hub strives to make HKU authors and their research very visible, with the goal of increasing all forms of collaboration.



Altmetric is a small London-based start-up focused on making [article level metrics](#) easy. We believe that:

Scientists should be able to see which recent papers their peers think are interesting

Authors should be able to quantify the attention their articles are receiving

Publishers should be able to show authors and readers the conversations happening around their content

Editors should be able to quickly identify commentary where a response is required

We've created and maintain a cluster of servers that watch social media sites, newspapers and magazines for any mentions of scholarly articles.

In mid January 2012 we were tracking approximately three thousand unique papers a day.

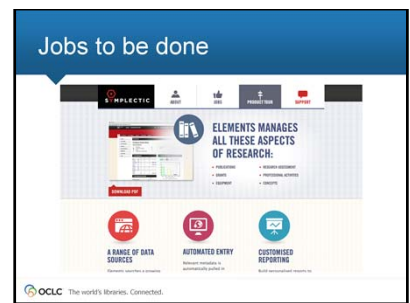
If somebody has recently tweeted, blogged or posted a public link to your paper then we quite possibly know about it.

We clean up the data, disambiguate articles and give each one an Altmetric score as described below.

The Altmetric score

The Altmetric score is a quantative measure of the quality and quantity of attention that a scholarly article has received. It is derived from three main factors:

Volume Sources Authors



Symplectic

Symplectic was founded in 2003 by four theoretical physicists studying for their PhDs at Imperial College.

During their research, they quickly realised that university staff and researchers were in need of simple, effective software to enable academic institutions to collect, contextualise and raise visibility of their research outputs. Using their experiences, they built that software, and were quickly noticed by academic institutions all over the world.

Elements manages all these aspects of research:

- Publications
- Research assessment
- Grants
- Professional activities
- Equipment
- Concepts

•Digital Science is a division of Macmillan Publishers Ltd., launched in December 2010 to provide technology solutions for researchers. From intelligent knowledge discovery tools to software applications for the laboratory and decision-support systems for managers, Digital Science combines world-class technology with a resolute focus on scientists and those who support the research process.

<http://www.symplectic.co.uk/>

Visitors and Residents:
What Motivates Engagement with the Digital Information Environment?

- Funded by
 - JISC
 - OCLC
 - Lynn Silipigni Connaway, Ph.D.
 - Oxford University
 - David White
 - Alison Le Comu, Ph.D.
- In partnership with
 - University of North Carolina, Charlotte
 - Donna Landos, Ph.D.



 OCLC The world's libraries. Connected.

The University of Oxford and OCLC Research, in partnership with the University of North Carolina, Charlotte, are collaborating on a JISC-funded study to investigate the theory of digital residents and visitors with learners from late secondary school through post-doctoral education.

This work will increase understanding of how learners engage with the Web and how educational services and systems can attract and sustain a possible new group of lifelong learners. The trans-Atlantic partnership will support comparison of students' digital learning strategies in different cultural contexts.

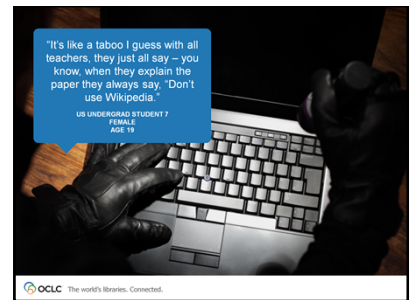


Image: <http://wp.me/pLtlj-fH>

- Covert online study habits
 - Wikipedia
 - Don't cite
 - Widely used
 - Guilt
- Students & teachers disagree
 - Quality sources

There is a "Learning Black Market": learners use non-traditional sources but feel they cannot talk about them in an institutional context. Wikipedia usage is an example of this. (White & Connaway, 2011)

– White, D. S., & Le Cornu, A. (2011). Visitors and Residents: A new typology for online engagement. *First Monday*, 16(9). Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/3171/3049>

"I mean if teachers don't like using Wikipedia they don't want you to use Wikipedia. A lot of students will still use Wikipedia and then cite another source. As long as it has the same information and it is not word for word or anything they'll use Wikipedia because it is the easiest thing to go look up on Wikipedia. It will give you a full in-depth detailed thing about the information. Teachers don't just like it because it's not the most reliable source since anyone can post something on there even though the site is monitored, it's because it's too easy." (US Undergraduate Student3, Male, Age 19)

Students' Perceptions of Teachers' opinions of Wikipedia:

"Avoid it." (UK Secondary School Student8, Female, Age 16)

"They say it's because anyone can make up – I mean, anyone can add information on there but I mean when I've actually looked into information it seemed the same as any information I find anywhere else. I mean, it's not like if you look up fourth of July, it's not like it gives you like some weird explanation of aliens or something." (US Undergraduate Student7, Female, Age 19)

Students' on Wikipedia:

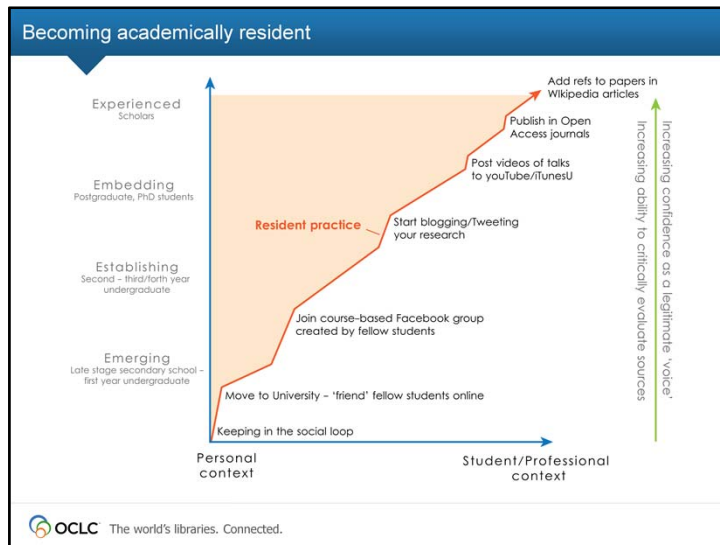
"I use it, kind of like, I won't cite it on my papers but I, kind of, use it as a like, as a start off line. I go there and look up the general information, kind of, read through it so I get a general idea what it is. Then I start going through my research." (US Undergraduate Student7, Female, Age 19)

"Everyone knows that you try not to use Wikipedia as a source because it is a cardinal sin." (UK Undergraduate Student3, Female, Age 19)

Visitors and Residents	
<ul style="list-style-type: none"> • Visitors <ul style="list-style-type: none"> – Functional use of technology – Formal need – Passive online presence – Favor face-to-face interactions – <6 hours online/week 	<ul style="list-style-type: none"> • Residents <ul style="list-style-type: none"> – Significant online presence and usage – Collaborative activity online – Contribute online – Mobile device dependence – >10 hours online/week

Visitors: functional use of technology, often linked to formal need (such as use of software for specific coursework, or organising meetings through email contact); less visible/more passive online presence, more likely to favour face-to-face interactions (even as they use the internet to organize/schedule those interactions); fewer than 6 hours spent online a week.

Residents: significant online presence and usage; high level of collaborative activity online; contributions to the online environment in the form of uploading materials, photos, videos; high dependence on a mobile device (smart phone, laptop, etc.); more than 10 hours a week spent online.



How do students behave when in our learning environment? How do we need to react?

by [David White: University of Oxford](#) on *Mar 07, 2013*

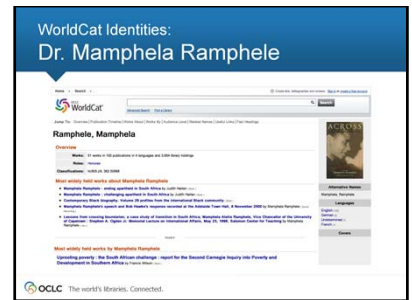
10 views

Workshop for the Changing the Learning Landscape event
<http://www.lfhe.ac.uk/en/programmes-events/your-university/cll/index.cfm>

Phil – it might be worth a chat with Lynn about incorporating some Visitors and Residents stuff in Jay's presentations. Stuff like the learning black market (where students use Wikipedia and facebook to get their work done, but this is not visible) really resonates with audiences.

The University of Oxford and OCLC Research, in partnership with the University of North Carolina, Charlotte, are collaborating on a JISC-funded study to investigate the theory of digital residents and visitors with learners in the educational stages: Emerging (Late stage secondary school-first year undergraduate); Establishing (Second/third year undergraduate); Embedding (Postgraduates, PhD students); and Experienced (Scholars).

This work will increase understanding of how learners engage with the Web and how educational services and systems can attract and sustain a possible new group of lifelong learners. The trans-Atlantic partnership will support comparison of students' digital learning strategies in different cultural contexts. Further [details...](#)



51 works in 100 publications in 4 languages and 1,654 library holdings



The next trend that I want to discuss is cloud services.

For the past four years, in annual reports and presentations, I have discussed our plans and activities to build Web-scale services with libraries in the Internet “cloud.”

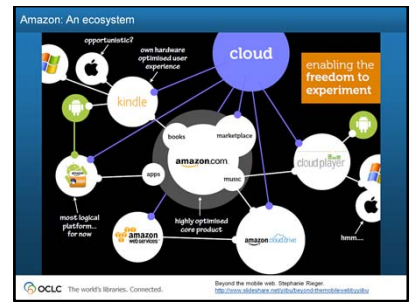
This means Web-based applications with shared data and services.

However, when we at OCLC talk about “Web-scale” we mean more than simply cloud computing.

Web-scale also means concentrating computer resources, applications and data to deliver benefits to large numbers of users through the Web.

Libraries can move their hardware and software to the cloud, where OCLC or somebody else will operate them.

CLICK TO AMAZON ECOSYSTEM



For example, Amazon uses the power of a cloud-computing infrastructure to provide a 24/7 online experience to online purchasers, as well as providing an “on-demand” provider of this computing infrastructure to others.

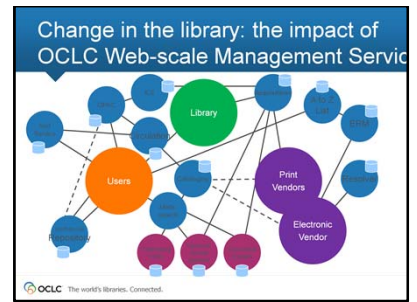
Amazon provides a flexible platform on which developers and programmers can innovate and experiment using Amazon Web Services.

Amazon leverages the Web environment to build, maintain and evolve a variety of relationships with others in order to provide an optimum user experience.

Amazon recognizes the importance of being where their users are, rather than expecting the user will only use the Amazon portal.

Amazon understands the power of the cloud.

CLICK TO THE LIBRARY WEBSCALE ENVIRONMENT



Here is the library environment that we have today.

Each of these circles represents a service that was implemented to better serve library users or support the back office operations.

Our infrastructure has grown very complex.

What if we could integrate these services—in the cloud—with the global library community?

CLICK TO NEXT VIEW



It's interesting to note that OCLC Founder Frederick G. Kilgour anticipated today's cloud computing back in 1967.

His original design for the OCLC online system called for six subsystems that would connect libraries to a centralized computer resource:

Online union catalog and shared cataloging

Serials control

Technical processing
(acquisitions)

Interlibrary loan

Retrieval by subject

Remote catalog access and circulation control

Libraries would access these subsystems from remote workstations.

The costs of the hardware and software in the cloud—mainframes owned by the OCLC cooperative—would be shared by the members based on their use of the subsystems.

Fred, it only took us 46 years, but we made it back to the cloud!

CLICK TO GLOBAL DATA CENTERS



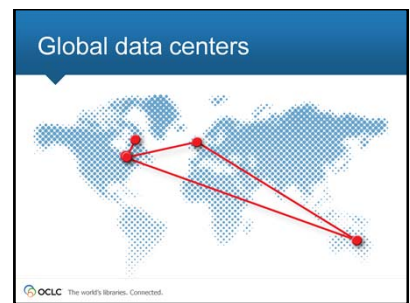
We continue to move full speed ahead with our new WorldShare services that we are building cooperatively with libraries in the Internet cloud.

Our new platform and network enable library developers, partners and others to create and share applications for libraries and their users.

Our strategy for building web-scale includes four areas:

- Create system-wide efficiencies in library management
- Represent the full range of member collections and services where the library user is
- Build a global infrastructure responsive to local conditions
- Advance the future of libraries

CLICK TO KILGOUR'S STRATEGIC PLAN



We currently have data centers, in Dublin and Westerville in Ohio, and London, Leiden, Sydney and Toronto.

LJ interview:

There's already this huge issue of patron privacy, which is not just a U.S. issue as we know.

It's particularly sensitive in the E.U., and our solution to that is to deploy global data centers so we can guarantee that patron data is not passed to U.S. servers.

CLICK TO ISO 27001



Our WorldShare Management Services community continues to grow.

As of this month, more than 143 libraries worldwide have committed to WorldShare Management Services.

There are 93 libraries that are now live.

I am also pleased to report that there is growing interest in WMS around the world.

CLICK TO AUSTRALIA PILOT LIBRARIES



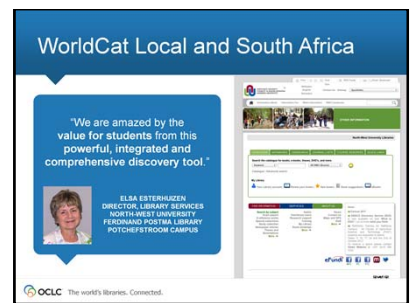
OCLC and Sabinet, OCLC's partner in South Africa, have signed an agreement to provide WorldCat Local, OCLC's discovery service, as a single point of access and delivery of electronic, print and digital resources to the National Library of South Africa and 15 academic institutions listed on the screen.

WorldCat Local offers a simplified discovery and delivery experience to end-users.

In addition to the National Library, the libraries are:

- Unisa
- University of Pretoria
- University of KwaZulu-Natal
- North West University
- Cape Peninsula University of Technology
- Stellenbosch University
- Tshwane University of Technology
- Rhodes University
- Fort Hare University
- University of the Witwatersrand
- Nelson Mandela Metropolitan University
- Walter Sisulu University
- Vaal University of technology

CLICK TO CONTENTdm



“Because of the distance between the three campuses, the need to co-exist and co-service our users virtually has become a necessity. At the end of 2011, the North-West University Library adopted WorldCat Local as our discovery platform on all our campuses. It was phased in during 2012 during a relatively simple and painless process. We are amazed by the value for students from this powerful, integrated and comprehensive discovery tool.

”

—Elsa Esterhuizen Director, Library Services, Ferdinand Postma Library, Potchefstroom Campus

Our next trend is partnerships.

OCLC and its member libraries must make an increasing number of connections.

I will discuss partnerships within the context of the OCLC cooperative.

CLICK TO OCLC PARTNERSHIPS

- OCLC's success depends on both public and private (commercial) partners
- Commercial partners are "customers"
- Cooperation strengthens OCLC's platform

Both libraries and OCLC are going to have to rely increasingly on partners.

I am going to discuss public-private partnerships within the context of OCLC cooperative.

OCLC frequently partners with organizations in private industry for the benefit of its member libraries.

Each partner brings its unique resources and strengths to the table.

The resulting synergy improves and speeds progress toward common goals

qIn discussing partnerships and the OCLC cooperative, there are three things to keep in mind.

First, OCLC's success depends on its partners. I want to inform you of the variety and breadth of our partnerships and the benefits of these relationships to the libraries we serve, OCLC itself, and the partners themselves.

Second, at OCLC, we view our commercial partners as customers. They are not necessarily OCLC members, but they are customers, and we have to treat them right.

Third, some partners compete directly with OCLC in some areas. That is not all bad.

Indeed, as we shall see, cooperation can actually strengthen OCLC's platform and the services it provides its members.

CLICK TO COLLECTIVE VALUE OF OCLC PARTNERS

Fiscal 2011	
Collective value of OCLC partnerships	
Number of commercial partnerships	260
Records supplied by commercial partners	450M
Web referral traffic generated	32M
Revenue from commercial partners	\$11.2M (US)

In fiscal 2011, you can see the value that OCLC's commercial partners provided to the cooperative.

Then, OCLC had some 260 commercial partners.

These partners supplied some 450 million records that are used by OCLC members.

The partners generated 32 million Web referrals and \$11.2 million in revenue for the cooperative.

Today, OCLC has about 300 commercial partners.

CLICK TO OCLC PARTNERS IN 2012

- EBSCO
- Gale
- ProQuest
- Atlas Systems
- Relais International
- EasyBib
- Ex Libris
- Google Books
- Sustainable Collection Services

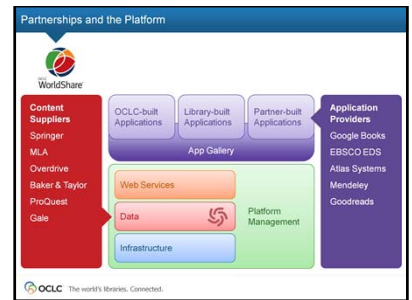
I should point out that there are already commercial third parties that are consuming our platform services in order to help libraries accomplish their objectives more efficiently.

Here is a summary of OCLC's current partners by category.

There are content suppliers, library service providers, and consumer service providers.

Arrangements vary with each partner.

CLICK TO DEVELOPER NETWORK



We have seen this diagram earlier.

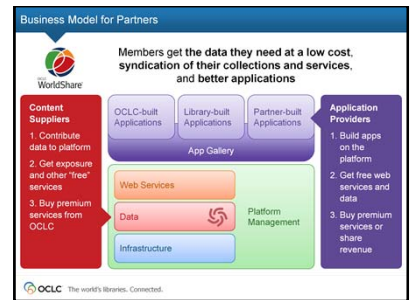
This time, I have added partners.

The platform supports interactions with content suppliers such as Springer, Baker & Taylor and OverDrive.

It also is designed to work with applications from such organizations as Google Books, EBSCO, and others.

Our new platform is based on the belief that new-model library systems need to offer a 'plug-and-play' environment to allow holistic patron-focused services to be synthesized from an ever-changing sea of web services.

CLICK TO LOGOS OF OCLC PARTNERS



On the screen are the benefits that come with partnering with the OCLC cooperative.

Content providers contribute data, and in return they get exposure via the OCLC network. They can also buy services from OCLC if they want to.

Application providers build apps on the OCLC platform, and return, they get free Web services and data. They can also buy services from or share revenue with OCLC.

Most important, OCLC members get the data they need at a low cost.

Their collections are syndicated for broad exposure.

And, the libraries get the benefit of improved applications.

CLICK TO WORLDCAT.ORG REFERRALS



Here is another benefit of OCLC's partnering with commercial organizations.

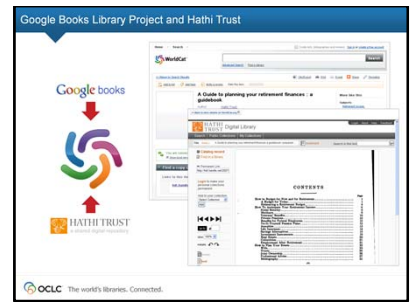
These are referrals that come in from the Web to WorldCat.org via Google, Yahoo, Bing and others.

As you know, WorldCat.org makes the collective collection of libraries visible on the Internet to people everywhere.

It aggregates library catalogs in the cloud to give the library community a unified and growing presence in the consumer Web space, where most people start their information search.

In the commercial world, a referral costs about 50 cents. If we were to multiply 80 million referrals by 50 cents each, we clearly have created a lot of value for libraries through partnering with commercial organizations like Google.

CLICK TO GOOGLE AND HATHI TRUST



In another partnership, OCLC is working with libraries, Google and the HathiTrust to derive new MARC records that represent these digital collections based on the rich collection of print records contributed to WorldCat by the OCLC membership over the last 40 years.

HathiTrust Digital Library is a digital preservation repository and highly functional access platform.

It provides long-term preservation and access services for public domain and in copyright content from a variety of sources, including Google, the Internet Archive, Microsoft, and in-house partner institution initiatives.

WorldCat searchers can locate digitized books from these collections and link to the associated book landing page, and in some cases can access the full text of eBooks available through these significant initiatives.

OCLC is adding records for these collections to WorldCat on an ongoing basis.

CLICK TO PARTNERSHIPS IN SUMMARY

- Commercial partnerships are critical to OCLC's success
 - They increase the value of the platform for our members and solidify our position as a library network
- We need to view partners as important customers
 - Must offer them value, if we expect value back for our members
- Cooperation is a route to success for the platform
 - Our success as a platform depends on our ability to serve libraries and patrons through the services THEY choose

Let me go back to where I began with partnerships.

They are a trend, and they are critical to OCLC's success.

- They increase the value of the platform for our members and solidify our position as a library network.

OCLC views its partners as important customers

- We must offer them value, if we expect value back for our members.

•Cooperation is a route to success for the platform

- Our success as a platform depends on our ability to serve libraries and patrons through the services THEY choose.

Above all, to maximize the value of our library services, the information industry needs to be far more externally focused than it has traditionally been.

The services OCLC is synthesizing will increasingly be coming from outside, commercial partners, and our services will need to be mobilized into domains outside of the traditional library sphere.

The industry needs to foster links with these adjacent domains at all levels if we are to realize the value inherent in our services.

CLICK TO TREND: LINKED OPEN DATA



Who is an ideal partner for OCLC?

I think it goes without saying that Sabinet has been an ideal partner.

Roz and her staff have done much for libraries and their users in South Africa and the African continent.

Sabinet combines its products and services with exceptional client service, high ethical standards and integrity.

This has created a dynamic and successful business culture that well serves libraries and their users.

We are indeed proud to partner with Sabinet.

Let me turn now to my final trend.

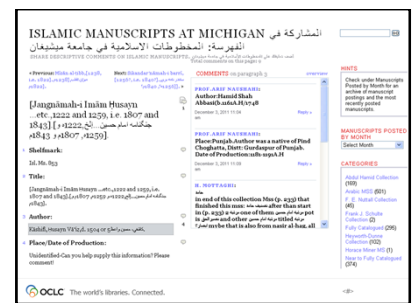
CLICK TO LINKED OPEN DATA

Our next trend is partnerships.

OCLC and its member libraries must make an increasing number of connections.

I will discuss partnerships within the context of the OCLC cooperative.

CLICK TO OCLC PARTNERSHIPS



Here is a clearer screen shot showing scholar's annotations/corrections of the brief catalog record.

Lessons learned:

- Crowd-sourcing cataloging can work
- Having a clearly identifiable “crowd” helps
- Local review of contributions made library staff confident in quality

CLICK TO TROVE

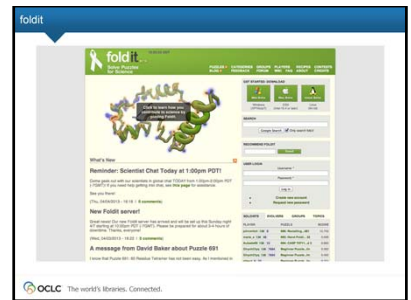


The Center for Game Science focuses on solving hard problems facing humanity today in a game based environment. Most of these problems are thus far unsolvable by either people alone or by computer-only approaches. We pursue solutions with a computational and creative symbiosis of humans and computers. For this symbiotic problem solving engine to work, two things need to co-evolve:

People need to be brought to a high level of expertise specific to each problem,

Computer tools need to adapt to best complement human problem solving and creative abilities.

The Center for Game Science believes that these two objectives can most naturally be framed within the game environment which promotes extended involvement by people and that allows for game tools to adapt based on analysis of data from human interaction.



Humans [retain an edge over computers](#) when complex problems require intuition and leaps of insight rather than brute calculation. Savvy programmers and researchers at the University of Washington have tapped into this human "supercomputer" with Foldit, an online game that poses complex puzzles about how proteins fold, one of the hardest and most expensive problems in biology today.

These results were recently reported in Nature journal, marking the first time the leading scientific journal has published a paper with over 57,000 authors, vast majority of whom have no background in biochemistry. More generally, Foldit showed that it is possible to effectively "crowdsource" human problem solving to solve very hard scientific problems, and that the gaming environment is capable of turning novices into highly skilled researchers. The goal of the Center for Game Science is to generalize and expand the success of Foldit to a wider range of problems. Following simple rules, gamers playing Foldit had to turn and flip a digital 3D model of the enzyme on their computer screens, to try out all folding combinations that were possible.

They eventually obtained the optimum one - the state that needed the lowest energy to maintain.

[Continue reading the main story](#) **"Start Quote**

These results show that gaming, science and computation can be combined to make advances that were not possible before"

End Quote Seth Cooper Foldit

Biochemist Firas Khatib of the University of Washington - where Foldit was created in 2008 - said that the goal was to see if "human intuition could succeed where automated methods had failed".

The researchers were so impressed with the result that they even included some participating gamers as co-authors of the study.

blems in science, education and beyond.



So, here are the latest statistics from WorldCat.

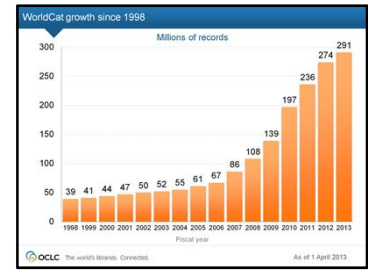
It is now contains over 289 million bibliographic records and more than 1.9 billion holdings.

WorldCat experts at OCLC are now predicting that we will hit 2 billion holdings within the next 4 to 6 months.

We should recall that it took member libraries 34 years, from 1971 to 2005 to add the first billion.

Now, we are going to add another billion in less than 8 years.

CLICK TO GROWTH CHART



Here is another favorite chart.

You can see the rapid growth of WorldCat in the last five years, due in part to the loading of large files of records from national libraries and others.

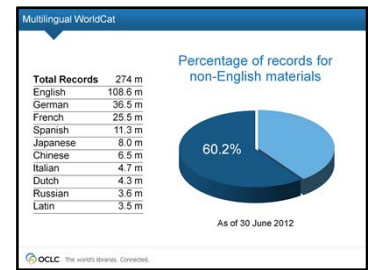
It's interesting to note that it took the OCLC cooperative 31 years, from 1971 to 2002, to add the first 50 million records

Six years later, WorldCat hit 100 million records in 2008.

Since then, libraries have added over 150 million records in about four years!

We should also remind ourselves that in 2010, we installed a new Automated WorldCat De-duplication system, which has since merged some 7.1 million duplicate records.

CLICK TO MULTILINGUAL WORLDCAT

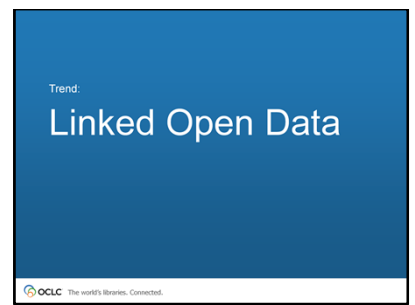


You can see the growth of records in languages other than English.

Eleven years ago, 36 percent of the records in WorldCat were non-English.

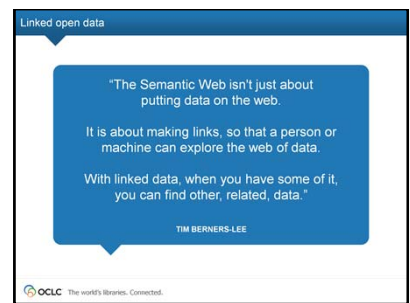
Today, 60.15 percent of the records are for materials in languages other than English.

CLICK TO COLLECTIVE COLLECTION



The final trend that I will discuss is linked open data.

CLICK TO TIM BERNERS LEE DEFINITION



As you know, open data is the idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control.

The Semantic Web is a "web of data" that facilitates machines to understand the semantics, or meaning, of information on the World Wide Web.

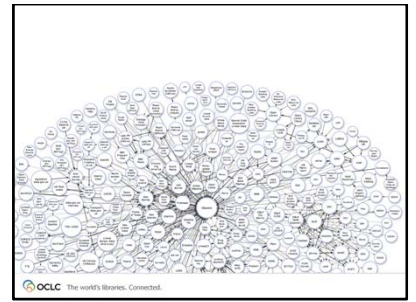
It extends the network of hyperlinked human-readable web pages by inserting machine-readable metadata about pages and how they are related to each other, enabling automated agents to access the Web more intelligently and perform tasks on behalf of users.

“Linked open data” goes a step further.

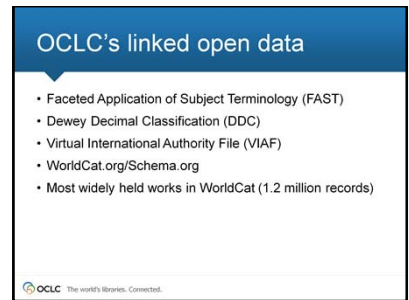
It is data that is available under an open license, allowing reuse of the data.

Let’s look at some linked data.

CLICK TO LINKED DATA BUBBLE DIAGRAM



AUTO ADVANCE SLIDE

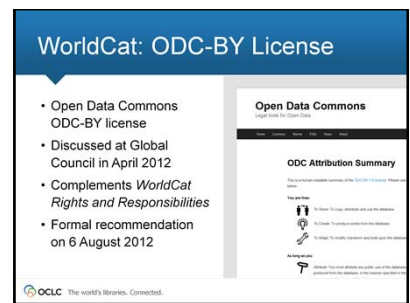


OCLC is generating new connections for users with linked open data and machine-to-machine interactions.

We currently make the resources you see on the screen available as linked open data.

- Faceted Application of Subject Terminology (FAST)
- Dewey Decimal Classification (DDC)
- Virtual International Authority File (VIAF)
- WorldCat.org/Schema.org
- Most widely held works in WorldCat (1.2 million records)

CLICK TO ODC-BY LICENSE



On August 6, OCLC announced that it is recommending the Open Data Commons Attribution License (ODC-BY) for member institutions that would like to release their library catalog data on the Web.

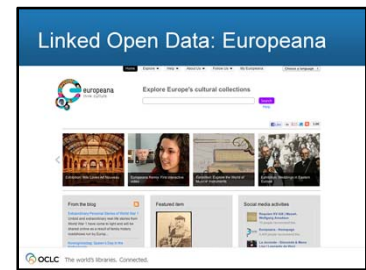
This open data license provides the means for users to share WorldCat-derived data in a manner that is consistent with the cooperative's community norms defined in the "WorldCat Rights and Responsibilities."

Data can be freely shared subject only to attribution and OCLC's request that those making use of WorldCat derived data conform to the community norms.

The recommendation follows passage of a resolution by OCLC Global Council in April 2012 that endorsed the ODC-BY, and recommended that OCLC staff consult with opinion leaders and stakeholders for further input.

After researching and experimenting with different data licenses on OCLC and WorldCat data projects, and in close consultation with the library and developer communities, the recommendation was adopted by the OCLC Board of Trustees.

CLICK TO EUROPEANA AGREEMENT



On September 4, OCLC and Europeana announced an agreement whereby OCLC member libraries can contribute WorldCat-derived metadata to the Europeana.eu portal in a manner consistent with OCLC's "*WorldCat Rights and Responsibilities for the OCLC Cooperative*."

As you may know, Europeana asks contributors to comply with the Creative Commons Zero Public Domain Dedication license.

While OCLC makes no intellectual property claims to individual metadata records in WorldCat, it asserts a copyright claim over the WorldCat database as a whole—which created uncertainty over contributions to Europeana.eu by members of the cooperative.

However, because OCLC wishes to support participation in Europeana by its member libraries, OCLC requested and Europeana agreed to ask subsequent users of the metadata to give attribution to both OCLC and to the contributing institution as the source, and to make them aware of the OCLC cooperative's community norms around data.

The specific procedures for attribution are still being developed.

CLICK TO SCHEMA.ORG



On June 20, we took a significant step in the world of linked data.

As you may know, Schema.org is a collaboration among Bing, Google, Yahoo!, and Yandex, the Russian search engine.

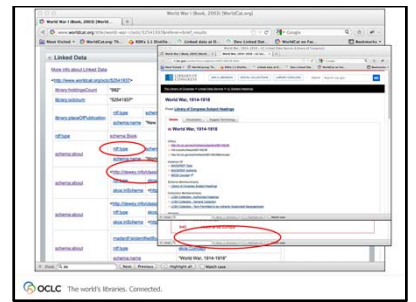
It is an agreed-upon system model for efficient harvesting of structured data from the Web.

I am pleased to report that OCLC is now adding linked data to WorldCat by appending Schema.org descriptive mark-up to WorldCat.org pages.

This is general commercial vocabulary, rather than library standards.

Anybody on the Web can interrogate WorldCat data...it's designed for machines, not humans.

CLICK TO LINKED DATA EXAMPLE



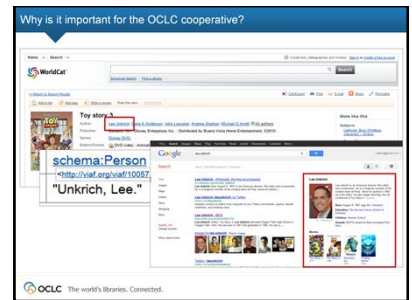
Thus, the entire publicly available version of WorldCat is now available for use by intelligent Web crawlers, like Google and Bing, and they can make use of this metadata in search indexes and other applications.

Links are going outside WorldCat to the Web of Data using non-library vocabulary.

This will raise the visibility of library resources and ultimately increase their availability.

(NOTE: This slide shows four images automatically.)

CLICK TO WHY IMPORTANT FOR LIBRARIES



Adding linked data to WorldCat records makes those records more useful—especially to search engines, developers and services on the wider Web, beyond the library community.

This will make it easier for search engines to connect non-library organizations to library data.

This enhancement also demonstrates the WorldShare vision by exposing rich bibliographic and authority data on behalf of OCLC member libraries.

The ODC-BY license and the move to linked open data are examples of the OCLC membership in action.

These were not unilateral actions by OCLC management, but rather, steps that were taken in concert with the governing bodies of OCLC and its library members.

From time to time, it's worthwhile to review what being an OCLC member means.

CLICK TO



Thus, you can see the resources from WorldCat starting to appear in the main index of Google...or Facebook.

With the Schema.org extensions, WorldCat data can now be drawn in to environments such as Facebook, and vice versa.

The rich links within the WorldCat data can then be used to bring even more information to the user; as from Wikipedia as shown here for instance.

This knitting together of data on the web is taking the library to where users are.

We have indeed moved one or two clicks closer to the user.

CLICK TO VIAF



I mentioned that the Virtual International Authority File is available as linked open data.

As you know, the VIAF combines multiple name authority files into a single name authority service.

At present, 22 agencies from 19 countries have contributed data to VIAF on a non-exclusive basis.

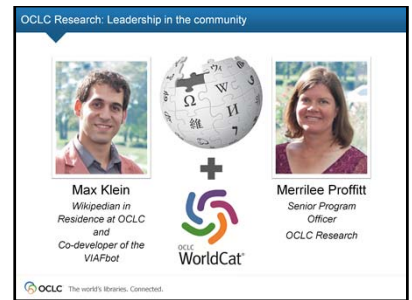
The National Libraries of Australia and New Zealand participate in VIAF.

Last April, the Virtual International Authority File transitioned from a research project to an OCLC service through agreement with the participants.

You will be interested to know that the VIAF gets over 50,000 visits from libraries a month.

There are approximately 1 million accesses a month via Google and Microsoft.

CLICK TO WIKIPEDIA AND VIAF



I am pleased to report that we have had a Wikipedian in Residence at OCLC since June.

He is Max Klein, and he is working in OCLC Research at the San Mateo, California office.

A Wikipedian in Residence, as defined by Wikipedia, is a "Wikipedia editor [who] accepts a placement with an institution to facilitate Wikipedia entries related to that institution."

Max and Merrilee Proffitt of OCLC Research have been working on a project to improve the connections between Wikipedia and libraries.

The result is VIAFbot.

This is an automated process that creates reciprocal links between Wikipedia articles about people and corporations and those names in the OCLC Virtual International Authority File.

To date, VIAFbot has added about 250,000 reciprocal links that were matched by name, important dates and selected works.

CLICK TO BIBFRAME AS A WEB OF DATA

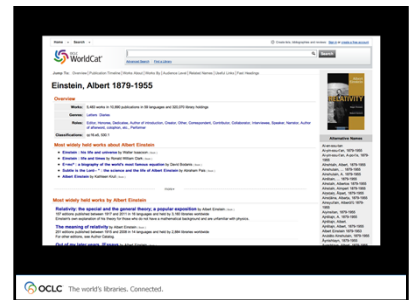
- Evolution of search
- E-volution of teaching and publishing
- Cloud computing
- Partnerships
- Group/social/gaming
- Linked Open Data

In my remarks today, I've touched on six trends that are affecting libraries and their users.

- Evolution of Search
- MOOCs
- Cloud computing
- Partnerships
- Linked open data

Each of these trends is moving us closer to a new era of mapping knowledge and finding what we want in an ever expanding universe of knowledge and information.

CLICK TO TREND: EVOLUTION OF SEARCH



On the screen is an example of a new kind of knowledge map that is now available thanks to the efforts of OCLC Research.

This is the WorldCat Identities page for Albert Einstein.

WorldCat Identities creates a summary page for some 25 million personal and corporate authors mentioned in WorldCat.

An Identities page displays lists of works written by and about the author, as well as a graphical timeline showing publication history.

Each page includes audience level, related names, useful links, associated subjects and languages.

The page for Albert Einstein lists 5,134 works in 9,955 publications in 59 languages and 306,703 library holdings. The MARC record yields up an amazing array of information that can be reshaped into exciting new tools for information seekers.

Let me close with a brief video about mapping knowledge.

I think this vision of a knowledge map is moving from a dream to a reality faster than we may think.

Think what can happen when we start to data-mine the collective collection of libraries around the world.

CLICK TO KNOWLEDGE MAP VIDEO

[illegible]

RUN EINSTEIN VIDEO

Thank you!

THANK YOU !